

Navigating troubled waters

Inside the Beltway, that 60-mi. ring road encircling Washington, D.C., the arrival of fall is less about colorful tree branches than about a new fiscal year. As we did under a different party last year, we went to press at the start of FY08 not knowing if the nation's lawmakers would enact appropriations or shackle agencies with a continuing resolution.

As of October 1, the 110th Congress had not passed one of the 12 major annual appropriations bills, and President Bush was threatening to veto as budget-busters four or five that might possibly cross his desk.

With NASA's boss sounding alarms about U.S. leadership in space, international frictions over a northern passageway, and controversy rife over U.S. funding of missile defense in Europe, this was a season when all agency heads in the nation's capital wanted their funding requests to become law.

NASA's looming launch gap

NASA chief Michael Griffin said in September that the U.S. will lose its leadership role in space between March 2010, when the shuttle retires (six months earlier than previously planned) and March 2015, when the Constellation program is scheduled to yield a next-generation Orion spacecraft ready for operations.

If that sounds like a government leader arguing for higher funding, Griffin readily acknowledges that he wants more money for his agency. He would like to narrow the gap between the last shuttle and the first Orion. Griffin says the scheduled retirement of the shuttle in 2010 poses a threat to national security.

"It would be very hard for any neutral third party to look at our situation after 2010 and say that on an operational basis we are a leader in space," Griffin told lawmakers during a trade group meeting on Capitol Hill. He said Russia and China could move ahead of the U.S.



NASA Administrator Michael Griffin

if Constellation's schedule is not accelerated. He later said China might go to the Moon with human explorers before the U.S. can return there with its Constellation program.

Griffin has launched a lecture tour in anticipation of next year's 50th anniversary of NASA, which was created in 1958 from the National Advisory Committee on Aeronautics. The change from NACA to NASA was the result of another historic event, one whose 50th anniversary has just passed—the October 4, 1957, launch of the Soviet Union's Sputnik, the first artificial satellite. Sputnik, said Griffin, was "an almost unimaginable embarrassment to the United States."

NASA is at the thriving heart of a \$180-billion "space economy" that benefits life on Earth, Griffin told one audience, stressing that money spent on space exploration produces jobs and profits.

As a new fiscal year loomed, NASA, which fared well in the authorization process on Capitol Hill, was facing the prospect that appropriations logjams might saddle the agency with another congressional continuing resolution, which would hold its FY08 spending to FY06 levels. Aware that such a resolution would undercut all his priorities, Griffin said, simply, "This problem has to be faced in Congress."

In the meantime, NASA was preparing the shuttle for this year's last two human spaceflights, STS-120 by Discovery and STS-122 by Atlantis, on October 23 and December 6, respectively. Discovery's seven astronauts, led by shuttle commander Air Force Col. Pamela Ann Melroy, were slated to carry out a complex construction job on their 13-day voyage, mating a second pressurized node dubbed Harmony, or Node 2, to the International Space Station. Built in Italy for the U.S., Node 2 is a high-tech hallway and industrial hub. It is a 4x7-yard passageway that will connect the U.S. segment of the ISS to the European Columbus Laboratory, scheduled to be grafted to the station by Atlantis in December.

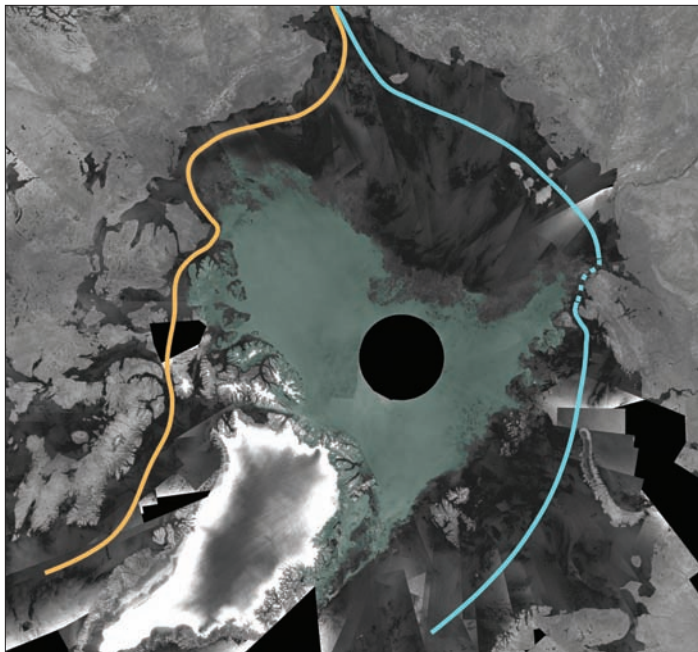
Disputed passage, revisited

"We believe it should be an international passageway," said President Bush when a reporter asked him about the Northwest Passage. "It's not a big Washington issue yet," notes a former State Dept. legal affairs officer, "but it's going to become a headache."

Both were referring to the Holy Grail of seaborne exploration, the route of passage from Europe to Asia that throughout much of history was viewed as a nearly unattainable dream.

Now, extreme melting has made the fabled Northwest Passage connecting the Atlantic and Pacific fully navigable. According to ESA, which has been monitoring the far north via satellite, this past summer marks the first time since record-keeping began that the passage has consisted of open water rather than massive barriers of ice. Some privately owned ships and boats made the traverse during the past few months.

The Washington-based National Snow and Ice Data Center, which is partly funded by the federal government, has been reporting since at least 2005 that once-frozen ocean surfaces far to our



Envisat ASAR mosaic of the Arctic Ocean for early September 2007 clearly shows the most direct route of the Northwest Passage open (orange line) and the Northeast Passage only partially blocked (blue line). The dark gray color represents the ice-free areas, while green represents areas with sea ice. Credits: ESA.

north are now liquid. Some experts say NSIDC data and ESA satellite monitoring confirm that global warming is occurring faster than previously reported.

A similar melting, says ESA, is on the verge of opening up a northern passage through the Russian Arctic.

The idea of a passageway near the North Pole predates discovery of the North American continent by European explorers and was abetted by an early, unscientific belief that ocean waters could not freeze. British explorer Capt. James Cook reported in 1755 that Antarctic icebergs contained fresh water, seemingly confirming that ice would not impede navigation near the planet's poles. After other explorations were unsuccessful, in 1906 Norway's Roald Amundsen first successfully navigated a path from Greenland to Alaska.

In yet another event marking a 50th anniversary this year, in July 1957 the Coast Guard cutters *Storis*, *Bramble*, and *Spar* departed Seattle and navigated a deep draft channel through the Arctic Ocean while collecting hydrographic in-

formation. Part of their mission was to support a chain of U.S. radar stations guarding against the Soviet Union, the Distant Early Warning or DEW Line. "We found the Northwest Passage," retired Chief Warrant Officer Three C.J. "Jim" Loback recalled in an interview. "We passed through the Bellot Straits on September 6 and ended up in Boston at the end of September."

As if Amundsen never existed, the Coast Guard's history Web site says this historic transit "ended a 450-year search for the Northwest Passage—a route for large ships across the top of North America." In 1966, the U.S.-owned SS *Manhattan* became the first commercial ship to navigate the passage.

Even then, a northern traverse was an anomaly. Today such transits may become routine. ESA says Arctic sea ice melted to a record low this summer, making the Northwest Passage in the Western Hemisphere fully navigable for the first time. Per Tergen, director of the Swedish Space Agency, says this will halve the distance of



*In July 1957 the *Storis* was one of three ships that navigated a deep draft channel through the Arctic Ocean. Part of their mission was to support a chain of U.S. radar stations guarding against the Soviet Union.*

shipping routes between Europe and Asia.

"There are no laws and precedents for this," says the State Dept. legal officer.

Canada and Denmark (which owns Greenland) are expected to claim ownership of what could become a billion-dollar business—routine, daily convoys hauling commercial cargoes through the passage. The Canadian Armed Forces have been extremely active in the region, and many Canadians say the Western Hemisphere Northwest Passage belongs to them. Russia has also indicated some claim over northerly passages in both hemispheres.

The U.S. position, as Bush indicated, is that these are international waters. Still, the Navy has increased its operations in the region. While the U.S. and Canada cooperate in the defense of North America, one expert says, "each is going its own way" in naval movements that show the countries' respective flags along the Northwest Passage.

Antimissile radar

In what would have been unthinkable just a generation ago, U.S. officials are considering a proposal to use a Soviet-made, Russian-owned missile defense radar installation at Gabala, Azerbaijan—once a key base for the Soviet Union's Strategic Rocket Forces.

The attention being paid to Azerbaijan is, so far, a sidelight to the Missile Defense Agency's European Third Site Program. The reference is to Europe, in general, which would be the "third site" for U.S. missile defense forces after Alaska and California.

Despite an unprecedented visit by Washington-based missile experts to Gabala, discussion about using Azerbaijan is not expected to alter the administration's plans to build radar and interceptor sites, respectively, in both the Czech Republic and Poland.

Russian President Vladimir Putin strongly opposes these plans. While Washington insists that they are designed to protect Western Europe from potential Iranian ballistic missiles, Moscow calls any presence in the Czech Republic and Poland a threat to Russia.

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The disagreement between Washington and Moscow is considered a high-priority issue and is raised repeatedly in direct talks between Putin and Bush.

On September 18, Washington-based U.S. officials received a grand tour of the previously top-secret Russian early warning site on the first-ever visit by outsiders to Gabala.

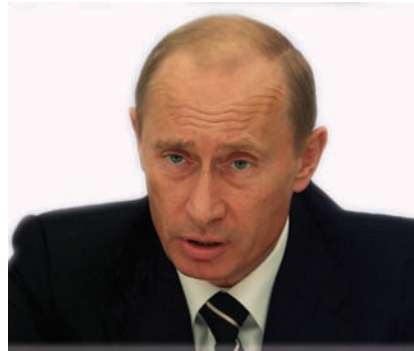
"This was a technical visit to give our experts an opportunity to get a tour of the facility and a briefing on its capabilities," Army Brig. Gen. Patrick O'Reilly, deputy director of the Pentagon's Missile Defense Agency, said in a briefing for reporters. O'Reilly emphasized that there were "no formal negotiations or consultations." In fact, the Azerbaijan visit was so low-key that some in Washington wondered if it was a cosmetic gesture toward U.S.-Russian relations, coupled with a serendipitous intelligence-gathering opportunity.

Putin has proposed that the U.S. abandon its plans for the Czech Republic and Poland and instead use the Cold War-era Russian long-range missile tracking radar at Gabala. O'Reilly reportedly told MDA chief Lt. Gen. Henry "Trey" Obering that the radar at Gabala is too old for U.S. purposes. It lacks the modern midcourse X-band capabilities of the radar intended for the Czech Republic. Ten ground-based interceptors would be stationed in Poland.

Experts in Washington see plenty of technical and scientific reasons for a European third site.

"It's a matter of physics and geometry," says retired Army Lt. Col. Stephen B. Peth, a Burke, Va., defense industry consultant. "You need to pull out a globe and study it: A missile flying a great circle route from Iran to the U.S. or Western Europe would have to fly directly over Eastern Europe to reach its intended target. A radar installation placed in Europe, especially Eastern Europe, would allow a missile defense system to gather data on the enemy missile early. And in missile defense, the earlier you can gather data on the enemy missile the better your chances for a successful engagement. The location of interceptors with long legs is less important than where you locate the radars and other sensors."

Peth says the U.S. should not wait for solid evidence that Iran has an offen-



Russian President Vladimir Putin

sive missile capability. "I think it is critical to get this deployment done as soon as possible," says Peth. "If you wait for the threat to appear and then start to deploy defenses, it is too late."

Peth says the Russian proposal is almost certainly a nonstarter, in part because Putin is offering outdated technology. To explore ways of resolving their differences, Bush and Putin agreed to a series of talks led by Assistant Secretary of State John Rood and Russian Deputy Foreign Minister Sergei Kislyak. The two sides met in Washington in July and again in Paris in September.

Along with other pending appropriations measures, Congress had not yet enacted FY08 funding for the European Third Site antimissile effort by the time *Aerospace America* went to press. Obering told reporters he expected his agency to receive three-quarters of what the Pentagon had requested for the program, or about \$225 million. But some in Washington, even while hawkish toward Iran, were questioning whether the European effort was moving too quickly into uncharted territory.

Sen. Daniel Inouye (D-Hi), a key figure in defense appropriations discussions, told reporters in September that it was too early in the political process to allocate so much toward European bases. "It is simply not yet time," said Inouye. A handful of critics wondered if the U.S. might negotiate directly with Iran. Some saw the planned missile installations as a political reward for Czech and Polish support for U.S. policy in Iraq.

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